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SIZE AND EFFICIENCY IN FARMERS'
MUTUAL FIRE INSURANCE COMPANIES

BY
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V.N. VALGREN 1876

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SIZE AND EFFICIENCY IN FARMERS' MUTUAL FIRE INSURANCE COMPANIES

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Are relatively small and local farmers' fire insurance companies more efficient than larger ones in providing members with needed insurance at low average cost, or is the reverse true? More specifically, is the matter of size as measured either by extent of business territory, or by volume of insurance, or by both of these related yardsticks taken together, a determining or even a significant factor in the average annual cost of insurance for these farm mutuals? This study represents an attempt to find answers to these and related questions.

FACTS AND PROBLEMS INVOLVED IN THE STUDY

The use of the territorial yardstick in arranging or grouping of farm mutuals gives a result somewhat similar but not the same as the use for this purpose of the volume-of-insurance yardstick. Territorially small companies necessarily have relatively small volumes of insurance. Those with wider territorial limits, as a rule though not always, have larger volumes of insurance. A company with a relatively small business territory, equal for example to one county or less, generally has as members a larger percentage of eligible farmers in its territory than does a company that operates over a more extensive area. Township and even single-county mutuals, in exceptional cases, have on their membership rolls 90 percent or more of the farmers in their territory. No multiple-county or State-wide mutual, so far as known, can show any such percentage of membership within its business territory.

With the above simple facts before us, the question of relationship between size and efficiency in farmers' mutual fire insurance

companies may be further amplified as follows. If either an indirect or a direct relationship is shown between size and efficiency, is it primarily the size as determined by either or both of our yardsticks used independently, or is it rather a certain relationship between them evidenced by territorial concentration of business, that helps companies in one size group to show up better than those in other size groups in the matter of low average annual cost?

These questions have long perplexed many officers, directors, and members of farm mutual fire insurance companies as well as economists concerned with problems of rural cooperation. Some of the earliest farm mutual insurance laws contemplated small and strictly local farm mutuals, as shown by the fact that they restricted companies of this kind to single townships. In several States a few single-township mutuals still exist and large groups of farmers' insurance companies continue to be known as township mutuals although under liberalized laws they now operate in a number of townships or in entire counties. Most States that in later years authorized distinct farmers' mutuals have permitted from the first county-wide or larger organizations. Hence at present the laws governing farmers' mutuals generally permit operating in several adjoining counties or in a number of townships equal to one or more counties. A few States no longer have territorial limits for farm mutuals other than the boundaries of the State.

Partly as a result of the territorial restrictions in the original township mutual laws and partly because many farm mutuals have voluntarily chosen to remain strictly local, a number of States and parts of States have an admittedly undue number of small farm mutuals. In the same or in other areas, an undesirable multiple overlapping often obtains in the business territories of these mutuals. Thus, although many areas and several whole States in fact have as yet no farmers' mutual fire insurance companies, other States and parts of States have what seems like a superfluity of small organizations.

In areas with numerous small organizations, the question of optimum size frequently arises in connection with proposed consolidation of two or more mutuals. In other areas, where farm mutuals as a rule have at least a county to themselves, the question of extending their business territories with a view to building up increased volumes of business also arises with relative frequency. In nearly all such instances conflicting opinions are encountered. Some officers and members may hold that by expansion of business territory and increase in volume of business the company can reduce its cost of insurance to members. Others may argue that expansion is certain to increase the average annual cost of insurance.

The present study was undertaken in the hope of answering or at least of throwing some light on the question of size of farm fire mutuals as a factor in their respective insurance costs. It was begun late in 1937 and has been advanced from time to time as other work, considered of more immediate importance, has permitted. At the time the study was begun, the 3 years, 1935, 1936, and 1937, were selected as a base

period. At that time a compilation of 1935 risk and cost data for all farm mutuals in the United States had been completed and a similar compilation of 1936 data had been begun. Such compilations and summaries of risk, cost, and other data, required in this study for the more than 1,900 farmers' mutual fire insurance companies in the United States, are necessarily delayed for a period of from 1 to 2 years after the expiration of the year to which the data pertain. - Published State insurance reports are the principal source of these data and the earliest of these reports become available near the end of the year following that covered by them. Some of them are more nearly 2 years late. A few States, in some years at least, have published no report at all. Others have supplied in their reports only part of the information required in this study. Hence, even after the State reports that can be expected become available, it is necessary in the case of many States to obtain additional or supplemental data either from the State departments of insurance or from individual companies.

A total of 1,941 farm mutuals were considered for this study. About 300 of these were omitted because they insured against windstorm as well as against fire. While the losses from fire for these companies could in many cases be found separated from the windstorm losses, no means were available for any exact allocation of the operating expenses between the fire insurance and the windstorm insurance. Furthermore, even if such allocation of operating expenses were possible, the providing of insurance against the two distinct hazards of fire and windstorm in the same policy, or in any case through the same organization, would tend to be a factor in the expense item allocated to the fire insurance. Companies omitted for these reasons naturally included a substantial percentage of the relatively large companies, since these most often offer combined protection.

In addition, approximately 300 farmers' mutual insurance companies were omitted for want of one or more of the items of information on their business needed to include them in the study. A few of the companies listed to be included on the basis of 1935 data had to be omitted because they were consolidated with other farm mutuals during the ensuing 2 years. Only companies for which the needed data were available for each of the 3 years, 1935-37, are included in the tabulations found on the following pages. The number of farmers' mutual fire insurance companies at the close of 1935 and the number finally included in the study are shown, by geographic divisions, in table 1.

TABLE 1.—Number of companies included in the study compared with number in operation at the close of 1935, by geographic divisions

GEOGRAPHIC DIVISION	COMPANIES INCLUDED	COMPANIES EXISTING
	<i>Number</i>	<i>Number</i>
New England.....	28	68
Middle Atlantic.....	237	313
East North Central.....	527	651
West North Central.....	346	612
South Atlantic.....	81	127
East South Central.....	12	48
West South Central.....	14	58
Mountain.....	30	32
Pacific.....	29	32
United States.....	1,304	1,941

EXTENT OF BUSINESS TERRITORY AND COST

To bring out the relationship, if any, between extent of business territory and cost, the companies for which the required information was available were sorted into ten groups based on the extent of their respective business territories as follows:

Group 1	1 township
Group 2	2-5 townships
Group 3	6-10 townships
Group 4	1 county
Group 5	2 counties
Group 6	3 counties
Group 7	4-5 counties
Group 8	6-10 counties
Group 9	11 counties or more, but less than 1 State
Group 10	1 State

In States where some or all of the farm mutuals report territory on a township basis even when the area exceeds that of an average county, the business territory was changed into county units. An area of 11-20 townships was considered the equivalent of 1 county. The States, and to a lesser extent the counties and townships, are obviously far from perfect units to measure business territory. No attempt was made, however, to allow for the variations in area of these units. The lack of standard units for measuring business territory is likely to affect the results of this study principally in the East with its small States alongside of larger ones and with its irregular township and county borders.

Grouping all the farm mutuals in the United States for which the necessary data were available in the business-territory size groups already indicated gives the results shown in table 2. The volume of insurance for each group in this table represents one-third of the sum of the insurance in force at the end of each of the 3 years in each of the different companies comprising the group. The losses, expenses, and total disbursements for each group similarly represent one-third of the sum of these outlays for the 3-year period. The costs in cents per \$100 of insurance were calculated from the 3-year totals for insurance, losses, expenses, and total cost, but they can be derived equally well from the average annual figures given in the table.

The annual figures in the column for total cost per \$100 of insurance, it may be noted, show an irregular upward trend in passing from the first or single-township group to the last or 1-State group. This is true in a limited way of the column showing losses per \$100 of insurance, but it is more pronouncedly true of the per \$100 figures in the expense column. Since the upward trend in cost with increasing business area occurs both in the loss column and in the expense column, it must necessarily also appear in the column for total cost per \$100. The figures for "all groups" at the bottom of the table are useful mainly

because they show weighted average figures of "per \$100" cost with which each corresponding group cost figure may be readily compared.

TABLE 2.--Average annual cost of insurance in farmers' mutual fire insurance companies grouped by extent of operating territory, 3-year period 1935-37, United States as a whole

GROUP BY EXTENT OF TERRITORY	COM- PANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS					
			AMOUNT			PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL	LOSSES	EXPENSES	TOTAL
	<i>Number</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
1 township	80	73,093,684	131,125	31,650	162,775	17.9	4.4	22.3
2-5 townships	115	265,450,956	381,258	102,390	483,648	14.4	3.8	18.2
6-10 townships	74	222,437,487	286,933	79,373	366,306	12.9	3.6	16.5
1 county	353	1,581,070,597	2,805,243	798,108	3,603,351	17.7	5.1	22.8
2 counties	155	796,102,725	1,513,404	395,957	1,909,361	19.0	5.0	24.0
3 counties	126	696,509,948	1,246,871	384,969	1,631,840	17.9	5.5	23.4
4-5 counties	260	1,733,431,542	3,005,415	961,614	3,967,029	17.3	5.6	22.9
6-10 counties	39	319,562,939	541,282	198,343	739,625	16.9	6.2	23.1
11 counties or more	26	338,543,742	661,809	355,885	1,017,694	19.6	10.5	30.1
1 State	76	794,231,400	1,735,931	1,014,394	2,750,325	21.8	12.8	34.6
All groups	1,304	6,820,435,020	12,309,271	4,322,683	16,631,954	18.1	6.3	24.4

The irregular upward trend in cost with increasing business territory indicated by table 2 is shown graphically in figure 1. The curves for expenses, losses, and total cost per \$100 very clearly bring out that when the 1,304 farm fire mutuals in the United States for which required data were obtained are arranged in a series of increasing size groups based on business territory a direct though somewhat irregular relationship between cost and business area is indicated.

Earlier Study Shows Similar Results

Before pointing out certain considerations that throw more or less doubt on the conclusion suggested by table 2 and figure 1, it may be of interest to note the similarity of results from the present study with the results of an earlier study of the same problem. This earlier study covered the 3-year period 1915-17. The results are presented in table 3 and are shown graphically in figure 2. The cost curves in figures 1 and 2, it will be seen, have a rather striking similarity. Both studies show much the same, though not identical, upward trends in cost with increasing business territory. Both point to the same territorial group of companies as the most efficient, namely, the third size group comprising companies with business territories of from 6 to 10 townships. Both diagrams indicate that it is lowness of losses rather than lowness of operating expenses that makes the third size group outstanding from the point of view of low total cost per \$100 of insurance.

FIGURE I
AVERAGE ANNUAL COST OF INSURANCE IN FARMERS' MUTUAL FIRE INSURANCE
COMPANIES GROUPED BY EXTENT OF OPERATING TERRITORY,
THREE-YEAR PERIOD, 1935-37
UNITED STATES AS A WHOLE

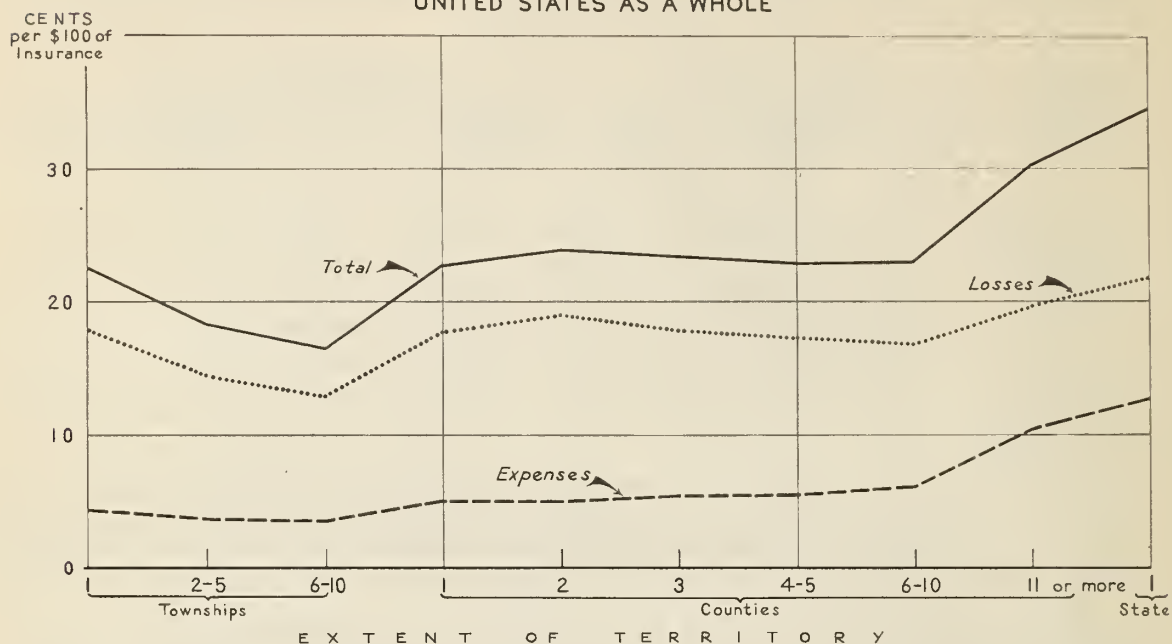


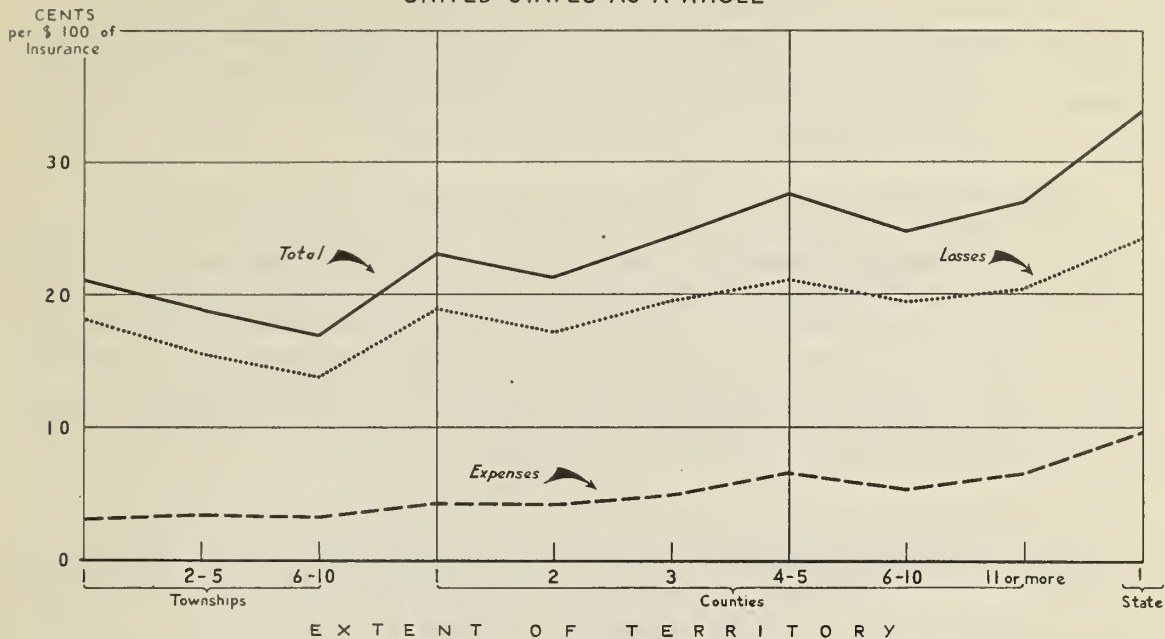
TABLE 3.--Average annual cost of insurance in farmers' mutual fire insurance companies grouped by extent of territory, 3-year period 1915-17, United States as a whole ^{1/}

GROUP BY EXTENT OF TERRITORY	COM- PANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL
	<i>Number</i>	<i>Million dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
1 township.....	131	69	18.1	3.0	21.1
2-5 townships.....	169	201	15.5	3.3	18.8
6-10 townships.....	143	226	13.7	3.2	16.9
1 county.....	589	1,666	18.8	4.2	23.0
2 counties.....	218	787	17.1	4.1	21.3
3 counties.....	126	402	19.5	4.8	24.3
4-5 counties.....	75	236	21.1	6.5	27.6
6-10 counties.....	37	160	19.4	5.3	24.7
11 counties or more.....	19	163	20.4	6.6	27.0
1 State.....	59	508	24.2	9.7	33.9
All groups.....	1,566	4,418	19.0	5.0	24.0

^{1/} Figures are from Valgren, V. N., *Farmers' Mutual Fire Insurance in the United States*, Chicago Univ. Press, 186 pp. 1924. See table IV, p. 49.

FIGURE 2

**AVERAGE ANNUAL COST OF INSURANCE IN FARMERS' MUTUAL FIRE INSURANCE
COMPANIES GROUPED BY EXTENT OF OPERATING TERRITORY,
THREE-YEAR PERIOD, 1915-17
UNITED STATES AS A WHOLE**



In general these two studies suggest increasing efficiency with increase in business territory until the territory reaches about 10 townships, and decreasing efficiency as a general rule from there on until we reach the group with entire States as business territory. The last named group has the highest cost of any group and hence shows the least efficiency as measured by cost.

Qualifying Considerations

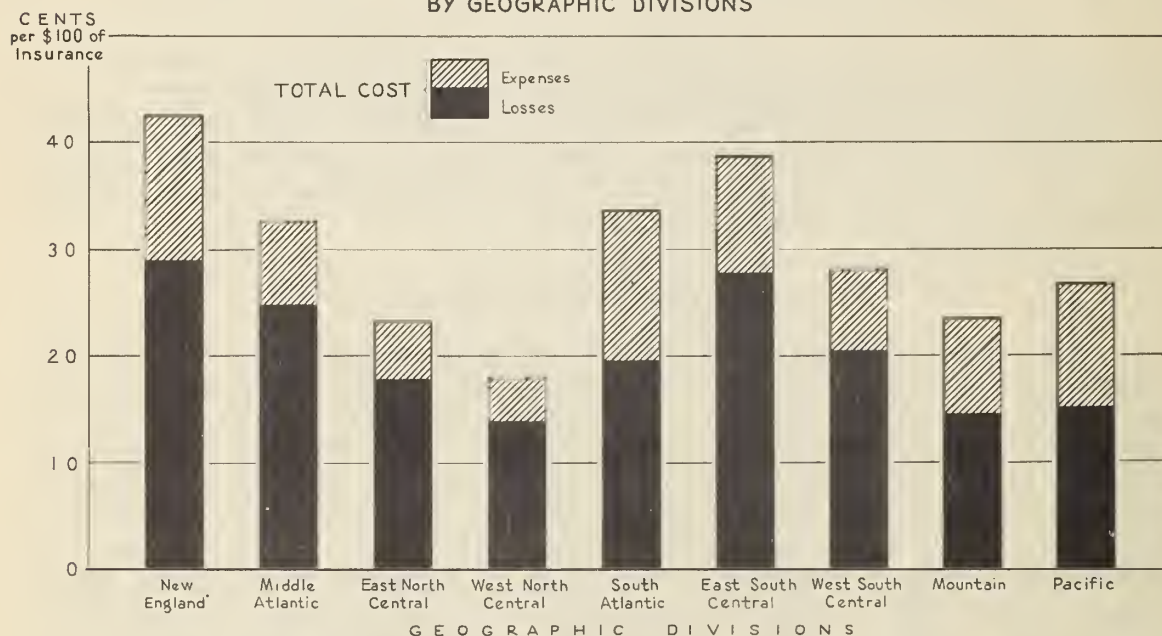
The conclusions suggested by the grouping and tabulations hitherto presented need to be qualified materially by reason of factors that are not apparent from the data in the tables. For example, the greater or lesser efficiency indicated for a given group of companies may be due largely if not entirely to the geographic location of a preponderant part of the companies comprising the group. This possibility results from two underlying facts: (1) that in some States the farm mutuals as a rule are numerous and relatively local, whereas in others they are fewer and generally larger in business territory as well as in volume of insurance, and (2) that some States are characterized by fewer fire losses on farms and lower cost of fire insurance than others.

This State and sectional variation in insurance costs is clearly shown in Farm Credit Administration bulletin 23 and also in earlier bulletins on farm mutual insurance published by the Bureau of Agricultural Economics of the United States Department of Agriculture. For our present purpose it seems sufficient to indicate in a bar diagram, designated figure 3, the average annual 3-year cost of insurance by

geographic divisions for the farm mutuals included in the study. In the West North Central division, comprising 7 States as shown more specifically in table 4, the average losses are less than 14 cents per \$100 and the operating expenses only slightly more than 4 cents with the total cost 17.9 cents. In the East North Central and the Mountain divisions the average cost is only slightly higher. In the New England and the East South Central States, on the other hand, the losses as well as the operating expenses are fully twice as high as they are in the West North Central States.

When these sectional differences in average insurance costs are taken into consideration and when a check-up reveals that the third or "6 to 10 township" group in tables 2 and 3 is comprised chiefly of companies in the East North Central and West North Central States, serious doubt is raised as to whether "6 to 10 townships" is necessarily the optimum business territory from the point of view of insurance cost as these tables and figures 1 and 2 suggest. Only 3 geographic divisions are represented by the 74 companies found in this group, and of these 71 are from North Central States.

FIGURE 3
AVERAGE ANNUAL COST OF INSURANCE IN FARMERS' MUTUAL FIRE INSURANCE
COMPANIES, THREE-YEAR PERIOD, 1935-37
BY GEOGRAPHIC DIVISIONS



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Another example of how costs for a group are affected by the geographic locations of the companies that comprise it is found in the first two groups in table 2 and figure 1. The first or single-township group in table 2 contains 80 companies and of these 62 are located in the New England and Middle Atlantic States. The second or 2 to 5 township group contains 115 companies and of these 90 are from North Central States. A simple reference to the bar diagram, figure 3, suggests that

the above facts alone may perhaps explain the higher costs, and particularly the higher less costs, for the first group as compared with those of the second.

In view of this disturbing factor associated with geographical location of the companies that predominate in different groups based on extent of their business territories, it was decided to prepare a table showing territorial grouping of companies for each geographic division. These groupings by geographic divisions will be found in table 4.

For 4 geographic divisions - the Middle Atlantic, South Atlantic, East North Central, and West North Central - a graphic presentation of costs for the different size groups of companies will be found in figure 4 following table 4. The rest of the geographic divisions covered in table 4 have too few companies to make the cost trends for the size groups of any material significance.

TABLE 4.--Average annual cost of insurance in farmers' mutual fire insurance companies grouped by extent of operating territory, 3-year period 1935-37, by geographic divisions 1/

GEOGRAPHIC DIVISION AND GROUP BY EXTENT OF TERRITORY	COM- PANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL
New England (Me., N.H., Vt., R.I., Conn.):	<i>Number</i>	<i>Dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
1 township.....	12	2,463,421	13.2	15.7	28.9
2-5 townships.....	3	5,021,025	21.8	13.1	34.9
6-10 townships.....	0	.....	.....	.....	.....
1 county.....	2	701,268	58.2	24.8	83.0
2 counties.....	0	.....	.....	.....	.....
3 counties.....	0	.....	.....	.....	.....
4-5 counties.....	0	.....	.....	.....	.....
6-10 counties.....	0	.....	.....	.....	.....
11 counties or more.....	0	.....	.....	.....	.....
1 State.....	11	158,867,231	29.2	13.4	42.6
All groups.....	28	167,052,945	28.9	13.5	42.4
Middle Atlantic (N.Y., N.J., Pa.):					
1 township.....	40	31,233,557	22.5	4.0	26.5
2-5 townships.....	22	37,792,757	20.7	5.2	25.9
6-10 townships.....	3	17,017,196	13.2	2.8	16.0
1 county.....	42	187,974,051	26.6	7.4	34.0
2 counties.....	26	190,106,187	30.4	7.8	38.2
3 counties.....	16	62,197,811	33.4	8.2	41.6
4-5 counties.....	46	308,575,008	24.6	6.6	31.2
6-10 counties.....	4	37,827,332	24.6	8.0	32.6
11 counties or more.....	7	92,311,033	18.4	5.3	23.7
1 State.....	31	239,038,031	20.4	12.5	32.9
All groups.....	237	1,204,072,963	24.6	8.0	32.6

1/ No farmers' mutual fire insurance companies, as the term is used in this study, are found in the following States: Massachusetts, Florida, Mississippi, Louisiana, New Mexico, Arizona, and Nevada.

TABLE 4.--Average annual cost of insurance in farmers' mutual fire insurance companies grouped by extent of operating territory, 3-year period 1935-37, by geographic divisions — Continued

GEOGRAPHIC DIVISION AND GROUP BY EXTENT OF TERRITORY	COM- PANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL
East North Central (Ohio, Ind., Ill., Mich., Wis.):	<i>Number</i>	<i>Dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
1 township.....	28	39,396,706	14.7	3.8	18.5
2-5 townships.....	89	222,090,202	13.1	3.4	16.5
6-10 townships.....	57	155,914,033	14.2	4.0	18.2
1 county.....	160	873,827,478	18.2	4.2	22.4
2 counties.....	47	235,684,693	16.6	4.1	20.7
3 counties.....	66	428,680,447	18.0	5.0	23.0
4-5 counties.....	50	443,713,786	17.6	4.8	22.4
6-10 counties.....	8	97,774,852	17.7	7.1	24.8
11 counties or more.....	9	121,588,838	21.4	11.9	33.3
1 State.....	13	242,686,579	21.6	11.9	33.5
All groups	527	2,861,357,614	17.7	5.4	23.1
West North Central (Minn., Ia., Mo., N. Dak., S. Dak., Nebr., Kans.):					
1 township.....	0	.....	.....	.....	.....
2-5 townships.....	1	546,972	23.2	3.7	26.9
6-10 townships.....	14	49,506,258	8.7	2.4	11.1
1 county.....	89	369,493,773	12.7	3.9	16.6
2 counties.....	65	344,665,359	14.6	3.7	18.3
3 counties.....	29	143,483,049	12.4	4.5	16.9
4-5 counties.....	127	808,696,539	14.7	4.2	18.9
6-10 counties.....	17	146,641,211	14.6	4.4	19.0
11 counties or more.....	3	31,285,991	8.1	4.1	12.2
1 State.....	1	6,741,142	8.8	3.2	12.0
All groups.....	346	1,901,060,294	13.8	4.1	17.9
South Atlantic (Del., Md., Va., W. Va., N. Ca., S. Ca., Ga.):					
1 township.....	0	.....	.....	.....	.....
2-5 townships.....	0	.....	.....	.....	.....
6-10 townships.....	0	.....	.....	.....	.....
1 county.....	34	67,706,500	20.7	11.1	31.8
2 counties.....	9	17,263,015	19.4	5.1	24.5
3 counties.....	8	33,195,852	12.8	6.3	19.1
4-5 counties.....	15	30,447,984	18.9	10.2	29.1
6-10 counties.....	3	7,992,326	22.1	10.3	32.4
11 counties or more.....	2	50,923,615	24.5	21.7	46.2
1 State.....	10	51,354,625	17.2	21.3	38.5
All groups.....	81	258,883,917	19.5	14.1	33.6

TABLE 4.—Average annual cost of insurance in farmers' mutual fire insurance companies grouped by extent of operating territory, 3-year period 1935-37, by geographic divisions — Continued

GEOGRAPHIC DIVISION AND GROUP BY EXTENT OF TERRITORY	COM- PANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL
East South Central (Ky., Tenn., Ala.):	<i>Number</i>	<i>Dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
1 township.....	0	.....	.....	.....	.....
2-5 townships.....	0	.....	.....	.....	.....
6-10 townships.....	0	.....	.....	.....	.....
1 county.....	6	8,755,194	22.3	6.7	29.0
2 counties.....	1	847,777	20.9	26.2	47.1
3 counties.....	0	.....	.....	.....	.....
4-5 counties.....	4	4,422,123	41.6	14.5	56.1
6-10 counties.....	1	2,439,761	24.2	13.9	38.1
11 counties or more.....	0	.....	.....	.....	.....
1 State.....	0	.....	.....	.....	.....
All groups.....	12	16,464,855	27.7	10.9	38.6
West South Central (Ark., Okla., Tex.):					
1 township.....	0	.....	.....	.....	.....
2-5 townships.....	0	.....	.....	.....	.....
6-10 townships.....	0	.....	.....	.....	.....
1 county.....	6	10,433,103	20.2	7.4	27.6
2 counties.....	3	882,216	26.4	10.5	36.9
3 counties.....	1	1,850,478	23.0	7.0	30.0
4-5 counties.....	2	2,863,903	24.2	10.4	34.6
6-10 counties.....	1	876,880	19.8	10.6	30.4
11 counties or more.....	1	2,297,224	12.3	3.8	16.1
1 State.....	0	.....	.....	.....	.....
All groups.....	14	19,203,804	20.4	7.7	28.1
Mountain (Mont., Idaho, Wyo., Colo., Utah):					
1 township.....	0	.....	.....	.....	.....
2-5 townships.....	0	.....	.....	.....	.....
6-10 townships.....	0	.....	.....	.....	.....
1 county.....	9	14,044,398	17.5	6.9	24.4
2 counties.....	1	1,305,377	11.2	11.8	23.0
3 counties.....	4	5,274,189	16.2	8.8	25.0
4-5 counties.....	5	4,047,846	14.9	14.1	29.0
6-10 counties.....	4	23,678,273	13.0	8.2	21.2
11 counties or more.....	1	20,869,806	16.3	7.0	23.3
1 State.....	6	39,521,196	13.0	10.7	23.7
All groups.....	30	108,741,085	14.4	9.0	23.4
Pacific (Wash., Ore., Calif.):					
1 township.....	0	.....	.....	.....	.....
2-5 townships.....	0	.....	.....	.....	.....
6-10 townships.....	0	.....	.....	.....	.....
1 county.....	5	48,134,832	7.9	9.8	17.7
2 counties.....	3	5,348,101	9.8	13.3	23.1
3 counties.....	2	21,823,122	15.9	13.1	29.0
4-5 counties.....	11	130,664,353	14.2	12.2	26.4
6-10 counties.....	1	2,332,304	20.3	11.7	32.0
11 counties or more.....	3	19,267,235	23.2	12.1	35.3
1 State.....	4	56,022,596	20.4	10.8	31.2
All groups.....	29	283,597,543	15.1	11.6	26.6

FIGURE 4
AVERAGE ANNUAL COST OF INSURANCE IN FARMERS' MUTUAL FIRE INSURANCE
COMPANIES GROUPED BY EXTENT OF OPERATING TERRITORY,
THREE-YEAR PERIOD, 1935-37
FOUR GEOGRAPHIC DIVISIONS

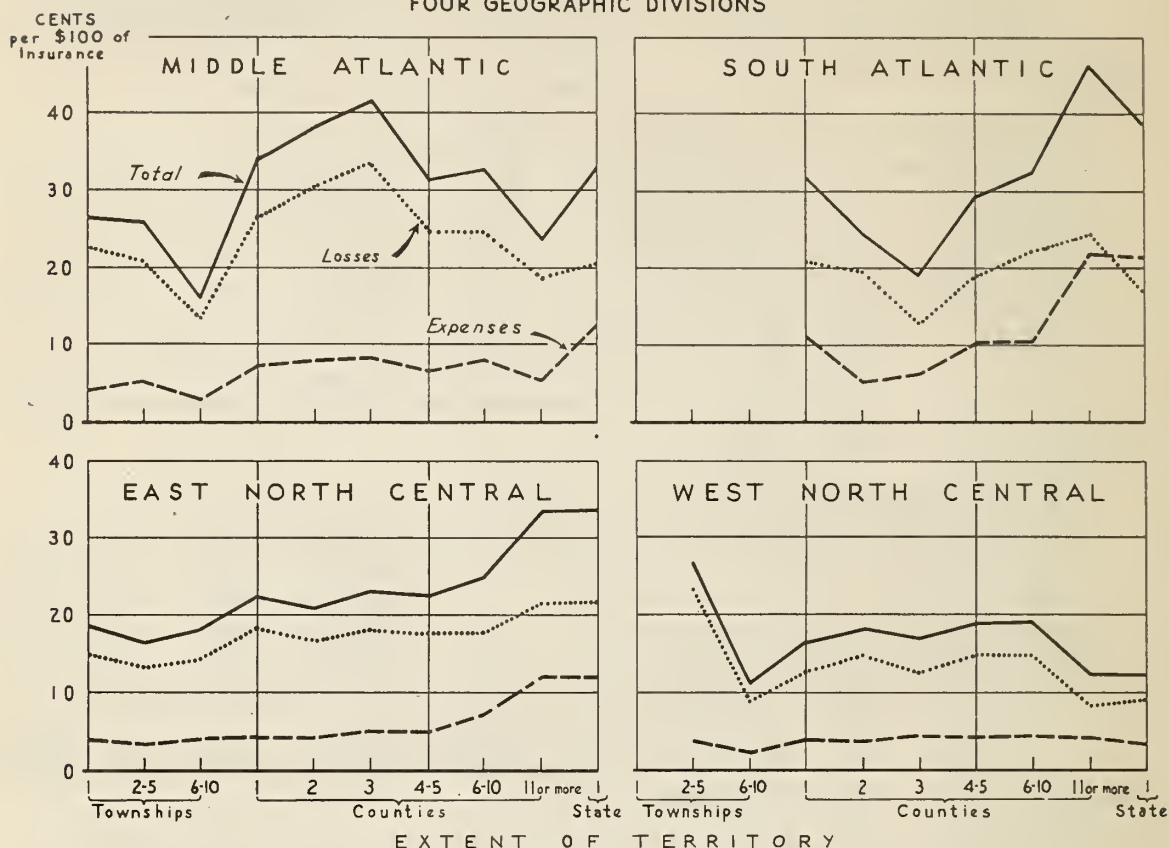


Table 4 and figure 4 indicate that the minimum cost or highest efficiency shown for the third group in table 2 and figure 1 for the United States as a whole is attributable largely to companies in the East and West North Central divisions. The Middle Atlantic division also, as it happens, shows lowest cost for the third group, but this division contributed only 3 companies to the 6 to 10 township group and therefore had only limited effect on the group average. None of the geographic divisions omitted in figure 4 have any companies in this particular group. The South Atlantic division shows lowest average cost in 3-county group and the East North Central division points in fact to the 2 to 5 township group of companies as the one with lowest average cost.

The group showing highest cost in the Middle Atlantic division, namely, the 3 county group, is strangely enough the lowest cost group in the South Atlantic division. In this last named division the highest cost group is the ninth or next to the largest in business territory. Another striking contradiction occurs between the East North Central and West North Central divisions. In the former the largest

two area groups show top costs, while in the latter these same two groups show costs only slightly above the minimum for any of the groups. In the West North Central division, however, the ninth and tenth groups contain only 3 companies and 1 company, respectively.

When consideration is given to the curves in these diagrams that show losses and expenses separately, instead of total cost, it is found that in the Middle Atlantic division the expenses show far less variation for the different groups than do losses. It is distinctly the losses and not the operating expenses that cause the 3 county group in this division to show a minimum of efficiency. In the South Atlantic division, on the other hand, it is the expenses rather than the losses that cause the last two groups to show the high total costs. In the West North Central division a striking drop in losses from the medium-sized companies to the largest, coupled with only a slight drop in expenses, gives the two largest territorial groups their favorable showing.

The East North Central division shows curves for expenses, losses, and total cost that on the whole resemble most closely those of figure 2 for the United States as a whole. This might perhaps be expected, since this division has more companies as well as more insurance included in this study than any of the other geographic divisions. In this division, however, the single township and the 2 to 5 township groups show up somewhat more favorably than they do in the table and diagram for the United States as a whole. In fact the table and diagram for the East North Central division show more nearly a regular rise in cost for the series of groups from those with the smallest business territory to those with the largest than do the table and diagram for the United States as a whole.

Since even States in the same geographic division have persistent differences in the average cost of farm mutual fire insurance, it was decided to prepare tables and diagrams bearing on territorial size and efficiency for the companies in two individual States, Pennsylvania and Wisconsin. The grouping of companies and the costs for the different groups in each of these two States are found in table 5.

In the case of Wisconsin no companies are included in the study that fall in groups representing more than 4 to 5 counties of business territory. Although the State has a number of companies with larger business territories all of them had to be omitted either because, like many of the Pennsylvania companies, they were not purely fire insurance companies, or for other valid reasons. Furthermore, all farm fire mutuals in the sparsely settled northern third of Wisconsin were omitted in order to have represented in each of the two sections of this table only companies operating under reasonably comparable conditions.

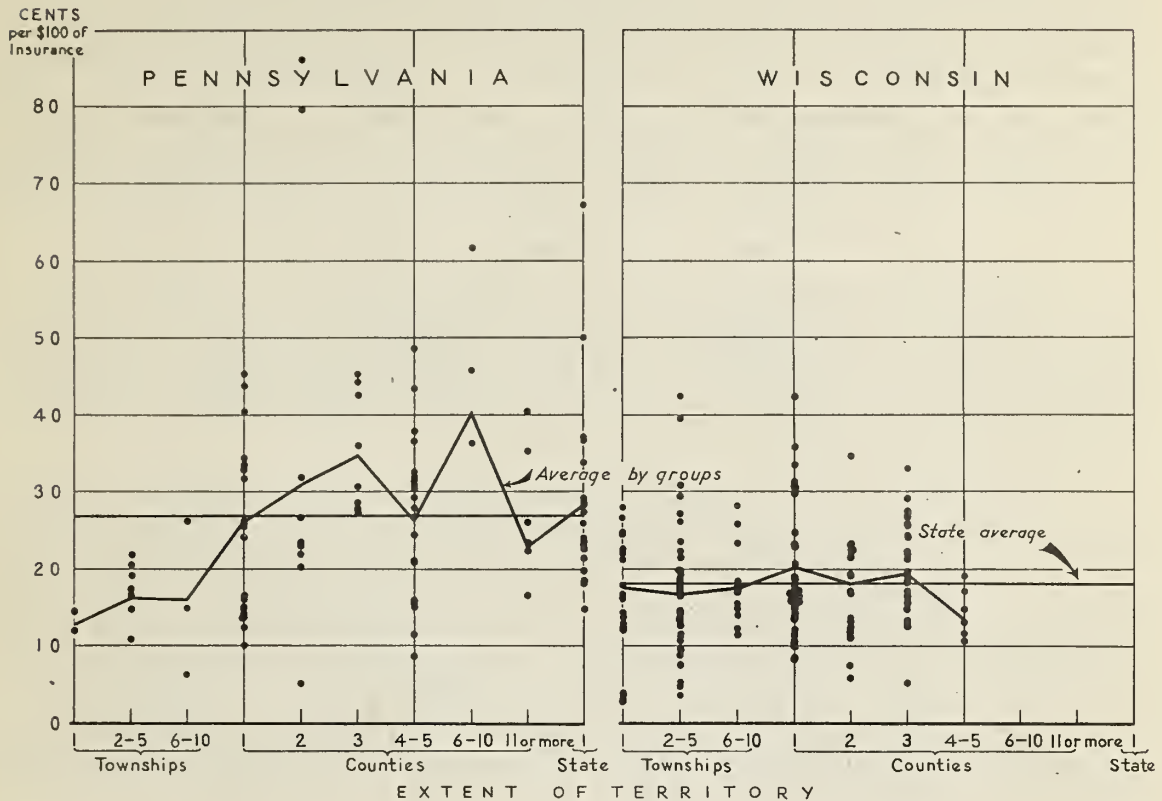
The diagram of the Pennsylvania groups and costs in figure 5 shows by a straight line across the page the average cost for all the 98 companies included. The average costs, by groups, are shown as in other diagrams by a line connecting the points for average costs for the

different groups. This diagram further indicates by dots on or near the vertical line above each territorial group the average annual cost for each company that comprises the group.

TABLE 5.—Average annual cost of insurance in farmers' mutual fire insurance companies grouped by extent of operating territory, 3-year period 1935-37, Pennsylvania and Wisconsin

STATE AND GROUP BY EXTENT OF TERRITORY	COM- PANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL
Pennsylvania:	<i>Number</i>	<i>Dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
1 township.....	2	999,192	9.5	3.2	12.7
2-5 townships.....	7	11,049,073	12.6	3.6	16.2
6-10 townships.....	3	17,017,196	13.2	2.8	16.0
1 county.....	20	91,032,920	19.7	6.3	26.0
2 counties.....	9	40,192,553	19.2	11.6	30.8
3 counties.....	8	26,532,135	27.1	7.6	34.7
4-5 counties.....	20	91,267,262	21.1	5.4	26.5
6-10 counties.....	3	20,707,471	28.9	11.3	40.2
11 counties or more.....	6	78,406,741	18.7	4.2	22.9
1 State.....	20	123,545,873	17.2	11.2	28.4
All groups.....	98	500,750,416	19.5	7.5	27.0
Wisconsin:					
1 township.....	19	30,307,174	14.0	3.5	17.5
2-5 townships.....	35	131,321,243	13.8	3.0	16.8
6-10 townships.....	14	52,490,933	14.4	3.2	17.6
1 county.....	36	244,383,310	16.8	3.4	20.2
2 counties.....	19	133,281,486	15.0	3.2	18.2
3 counties.....	26	187,861,060	15.2	4.3	19.5
4-5 counties.....	6	79,016,462	9.6	3.9	13.5
6-10 counties.....	0	.....	.....	.....	.....
11 counties or more.....	0	.....	.....	.....	.....
1 State.....	0	.....	.....	.....	.....
All groups.....	155	858,661,668	14.8	3.5	18.3

FIGURE 5
 AVERAGE ANNUAL COST OF INSURANCE IN FARMERS' MUTUAL FIRE INSURANCE
 COMPANIES GROUPED BY EXTENT OF OPERATING TERRITORY,
 THREE-YEAR PERIOD, 1935-37
 PENNSYLVANIA AND WISCONSIN



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The figure shows, therefore, not only the weighted average cost for each group but also the scatter above and below this group average of the cost in the individual companies in the group. The 2 county group particularly emphasizes the fact that certain companies may be greatly out of line with the majority in a group. In view of the new details introduced in this diagram only the average *total* cost is shown, and the components of this total - loss costs and expense costs - are omitted. In general, the diagram suggests increased costs with increased business territory, although certain medium or larger territorial size groups show lower costs than do some of the groups representing smaller business areas.

Figure 5 shows for the Wisconsin companies the same information as it does for the Pennsylvania companies. In Wisconsin the upward cost tendency with increased business territory is reversed by the group having the largest business territory represented. The fact that groups 8, 9, and 10 in the order of territorial size are not represented leaves one in doubt whether the low cost shown by the 4 to 5 county group actually represents a reversed tendency in the matter of cost or whether this is rather an adventitious fact ascribable to other causes. There

are, as indicated in table 5, only 6 companies in this last group but these 6 have an aggregate of over 79 millions of insurance.

Even after allowance for the fact that companies from low cost and high cost sections of the country are unequally represented in different groups, the data seem to indicate that low cost is most frequently found in the relatively local companies which serve areas approximating a single county or at most a few counties. This advantage in cost, however, is by no means striking, nor is the evidence of advantage highly conclusive. Furthermore, as will be stressed later, low cost considered by itself is not a perfect measure of efficiency in farm mutual insurance.

VOLUME OF INSURANCE AND COST

The purpose of this second part of the study was to ascertain the relationship, if any, between volume of insurance and cost of insurance. The same companies included in the earlier tables and charts were again separated into 10 groups, this time by volume of insurance in force during the 3 years, 1935-37.

The volume range determined upon for each of the different groups was as shown in the stubs of tables 6 and 7. Besides the number of companies and the average annual volume of insurance in each group, table 6 for the United States as a whole - like the corresponding table 2 in the grouping by business territory - shows the amounts of the average annual disbursements per \$100 of insurance. The groupings by volume for each of the geographic divisions, as found in table 7, omit the amounts of these disbursements but in other respects carry the same information for the geographic divisions to which they respectively apply as does table 6 for the United States as a whole

TABLE 6.—Average annual cost of insurance in farmers' mutual fire insurance companies grouped by volume of insurance, 3-year period 1935-37, United States as a whole

VOLUME GROUP IN THOUSAND DOLLAR UNITS	COM- PANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS					
			AMOUNT			PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL	LOSSES	EXPENSES	TOTAL
	<i>Number</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
Less than 249	38	14,718,284	32,150	21,976	54,126	21.9	14.9	36.8
250-499.....	49	21,390,637	49,162	25,591	74,753	23.0	12.0	35.0
500-999.....	119	90,230,258	191,590	76,257	267,847	21.2	8.5	29.7
1,000-2,499..	326	572,371,430	1,064,938	394,256	1,459,194	18.6	6.9	25.5
2,500-4,999..	327	1,191,802,892	2,012,124	680,895	2,693,019	16.9	5.7	22.6
5,000-9,999..	269	1,948,173,771	3,485,999	1,078,736	4,564,735	17.9	5.5	23.4
10,000-24,999	160	2,287,571,811	4,186,837	1,382,499	5,569,336	18.3	6.0	24.3
25,000-49,999	14	476,509,881	857,247	346,053	1,203,300	18.0	7.3	25.3
50,000-99,999	3	217,666,056	429,224	316,420	745,644	19.7	14.6	34.3
100,000 or more.....	0	.....	.....	.....	.....	.....	.....	.....
All groups.	1,304	6,820,435,020	12,309,271	4,322,683	16,631,954	18.1	6.3	24.4

TABLE 7.—Average annual cost of insurance in farmers' mutual fire insurance companies grouped by volume of insurance, 3-year period 1935-37, by geographic divisions ^{1/}

GEOGRAPHIC DIVISION AND VOLUME GROUP IN THOU- SAND DOLLAR UNITS	COM- PANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL
New England (Me., N.H., Vt., R.I., Conn.):	<i>Number</i>	<i>Dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
Less than 249.....	11	1,387,135	14.5	7.0	21.6
250-499.....	2	690,120	1.9	14.2	16.2
500-999.....	2	1,509,754	49.2	19.8	69.0
1,000-2,499.....	6	14,761,747	31.1	13.7	44.8
2,500-4,999.....	1	4,133,247	75.8	46.4	122.2
5,000-9,999.....	3	22,095,218	30.5	22.7	53.2
10,000-24,999.....	1	25,769,258	37.5	4.7	42.2
25,000-49,999.....	1	37,639,466	38.1	4.6	42.7
50,000-99,999.....	1	59,087,002	14.9	17.1	32.0
100,000 or more.....	0	.....	.....	.....	.....
All groups.....	28	167,052,947	28.9	13.5	42.4
Middle Atlantic (N.Y., N.J., Pa.):					
Less than 249.....	10	1,860,458	17.0	9.8	26.8
250-499.....	13	7,509,087	34.0	9.4	43.4
500-999.....	34	24,616,080	22.4	6.9	29.3
1,000-2,499.....	59	110,187,500	21.8	7.0	28.8
2,500-4,999.....	43	162,659,870	22.6	8.2	30.8
5,000-9,999.....	41	294,391,692	26.4	8.2	34.6
10,000-24,999.....	34	485,856,997	26.1	8.2	34.3
25,000-49,999.....	3	116,991,278	19.4	6.9	26.3
50,000-99,999.....	0	.....	.....	.....	.....
100,000 or more.....	0	.....	.....	.....	.....
All groups.....	237	1,204,072,962	24.6	8.0	32.6
East North Central (Ohio, Ind., Ill., Mich., Wis.):					
Less than 249.....	2	341,457	.3	2.4	2.7
250-499.....	8	3,311,023	18.0	12.0	30.0
500-999.....	40	31,253,852	14.3	6.0	20.3
1,000-2,499.....	145	252,966,145	17.6	5.5	23.1
2,500-4,999.....	151	545,003,042	17.6	5.1	22.7
5,000-9,999.....	114	815,125,291	17.7	4.6	22.3
10,000-24,999.....	60	862,472,091	17.6	4.6	22.2
25,000-49,999.....	6	192,285,658	15.7	6.2	21.9
50,000-99,999.....	2	158,599,054	21.5	13.6	35.1
100,000 or more.....	0	.....	.....	.....	.....
All groups.....	528	2,861,357,613	17.7	5.4	23.1

^{1/} No farmers' mutual fire insurance companies, as the term is used in this study, are found in the following States: Massachusetts, Florida, Mississippi, Louisiana, New Mexico, Arizona, and Nevada.

TABLE 7.—Average annual cost of insurance in farmers' mutual fire insurance companies grouped by volume of insurance, 3-year period 1935-37, by geographic divisions - Continued

GEOGRAPHIC DIVISION AND VOLUME GROUP IN THOU- SAND DOLLAR UNITS	COM- PANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL
West North Central (Minn., Ia., Mo., N. Dak., S. Dak., Nebr., Kans.):	<i>Number</i>	<i>Dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
Less than 249.....	2	329,999	22.1	4.6	26.7
250-499.....	10	3,582,858	15.6	16.9	32.5
500-999.....	14	9,409,189	15.0	6.7	21.7
1,000-2,499.....	66	109,987,539	14.0	5.6	19.6
2,500-4,999.....	110	395,564,511	12.2	4.2	16.4
5,000-9,999.....	94	682,912,018	14.3	3.9	18.2
10,000-24,999.....	49	665,745,990	14.0	3.6	17.6
25,000-49,999.....	1	33,528,190	17.7	6.0	23.7
50,000-99,999.....	0	.....	.....	.....	.....
100,000 or more.....	0	.....	.....	.....	.....
All groups.....	346	1,901,060,294	13.8	4.1	17.9
South Atlantic (Del., Md., Va., W. Va., N. Ca., S. Ca., Ga.):					
Less than 249.....	5	9,503,657	22.7	17.3	40.0
250-499.....	10	3,991,948	23.7	13.9	37.6
500-999.....	13	10,051,186	33.9	10.9	44.8
1,000-2,499.....	28	45,125,464	20.0	11.3	31.3
2,500-4,999.....	13	51,390,511	19.1	9.6	28.7
5,000-9,999.....	6	42,081,768	15.6	10.1	25.7
10,000-24,999.....	5	65,081,295	20.5	20.3	40.8
25,000-49,999.....	1	31,658,089	16.3	17.7	34.0
50,000-99,999.....	0	.....	.....	.....	.....
100,000 or more.....	0	.....	.....	.....	.....
All groups.....	81	258,883,918	19.5	14.1	33.6
East South Central (Ky., Tenn., Ala.):					
Less than 249.....	3	409,500	26.0	21.3	47.3
250-499.....	0	.....	.....	.....	.....
500-999.....	4	3,105,447	38.1	19.2	57.3
1,000-2,499.....	3	5,450,697	29.4	12.7	42.1
2,500-4,999.....	2	7,499,210	22.3	5.5	27.8
5,000-9,999.....	0	.....	.....	.....	.....
10,000-24,999.....	0	.....	.....	.....	.....
25,000-49,999.....	0	.....	.....	.....	.....
50,000-99,999.....	0	.....	.....	.....	.....
100,000 or more.....	0	.....	.....	.....	.....
All groups.....	12	16,464,854	27.7	10.9	38.6

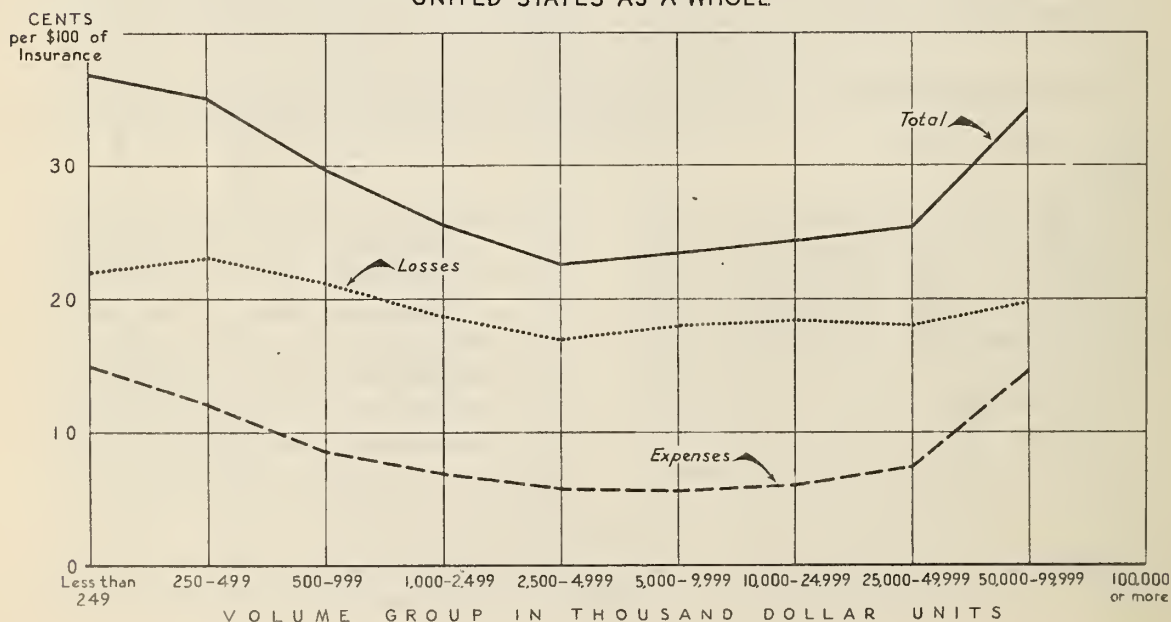
TABLE 7.—Average annual cost of insurance in farmers' mutual fire insurance companies grouped by volume of insurance, 3-year period 1935-37, by geographic divisions - Continued

GEOGRAPHIC DIVISION AND VOLUME GROUP IN THOU- SAND DOLLAR UNITS	COM- PANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL
West South Central (Ark., Okla., Tex.):	<i>Number</i>	<i>Dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
Less than 249.....	2	359,376	55.2	16.3	71.5
250-499.....	2	684,901	12.6	9.4	21.9
500-999.....	4	3,144,962	34.9	11.5	46.4
1,000-2,499.....	5	9,075,750	19.6	8.4	28.0
2,500-4,999.....	0	.....	.....	.....	.....
5,000-9,999.....	1	5,938,815	12.7	3.9	16.6
10,000-24,999.....	0	.....	.....	.....	.....
25,000-49,999.....	0	.....	.....	.....	.....
50,000-99,999.....	0	.....	.....	.....	.....
100,000 or more.....	0	.....	.....	.....	.....
All groups.....	14	19,203,804	20.4	7.7	28.1
Mountain (Mont., Idaho, Wyo., Colo., Utah):					
Less than 249.....	3	526,702	30.1	21.0	51.1
250-499.....	3	1,226,206	4.3	4.8	9.1
500-999.....	7	5,911,283	21.8	13.7	35.5
1,000-2,499.....	9	15,708,150	18.9	11.9	30.8
2,500-4,999.....	1	2,743,347	21.7	8.5	30.2
5,000-9,999.....	3	23,217,782	14.2	7.5	21.7
10,000-24,999.....	4	59,407,614	12.3	8.4	20.7
25,000-49,999.....	0	.....	.....	.....	.....
50,000-99,999.....	0	.....	.....	.....	.....
100,000 or more.....	0	.....	.....	.....	.....
All groups.....	30	108,741,034	14.4	9.0	23.4
Pacific (Wash., Ore., Calif.):					
Less than 249.....	0	.....	.....	.....	.....
250-499.....	1	394,494	28.6	19.2	47.8
500-999.....	1	1,228,505	2.6	20.1	22.7
1,000-2,499.....	5	9,108,438	27.1	14.3	41.4
2,500-4,999.....	6	22,809,154	21.0	13.3	34.3
5,000-9,999.....	7	62,411,187	18.3	13.2	31.5
10,000-24,999.....	7	123,238,566	13.3	12.0	25.3
25,000-49,999.....	2	64,407,200	11.5	8.1	19.6
50,000-99,999.....	0	.....	.....	.....	.....
100,000 or more.....	0	.....	.....	.....	.....
All groups.....	29	283,597,544	15.1	11.6	26.7

A glance at the column for total disbursements per \$100 of insurance in table 6 indicates that the most efficient group of companies, from the point of view of low cost, is the fifth group representing companies with average volumes of insurance during the 3-year period ranging from 2 1/2 to 5 million dollars. The relative efficiency of the different groups in this set-up is more clearly shown in figure 6. The line for total cost in this diagram indicates a steady decline and hence increasing efficiency until the above-mentioned fifth group is reached. From there on, the cost increases from group to group and this increase becomes rather striking in passing from the eighth to the ninth group. The latter is the largest volume group represented since all the companies with a hundred million or more of insurance finally had to be ruled out for lack of complete or comparable information.

A comparison of table 6 with table 2 reveals that in this set-up by volume of insurance an undue proportion of the companies falls into the fifth, sixth, and seventh groups, while in table 2 they are somewhat more evenly distributed among the different groups. This concentration of companies as well as of volume of insurance in the 3 groups mentioned might, of course, have been avoided by assigning somewhat wider ranges to the first 3 groups and narrower ranges to the later groups. The failure to bring about a more even distribution of companies among the volume groups may explain why in table 6 the group showing lowest cost, or highest efficiency, turns out to be the fifth group whereas in table 2, with its groupings by business territory, the third group makes the best showing in cost and efficiency.

FIGURE 6
AVERAGE ANNUAL COST OF INSURANCE IN FARMERS' MUTUAL FIRE INSURANCE
COMPANIES GROUPED BY VOLUME OF INSURANCE,
THREE-YEAR PERIOD, 1935-37
UNITED STATES AS A WHOLE



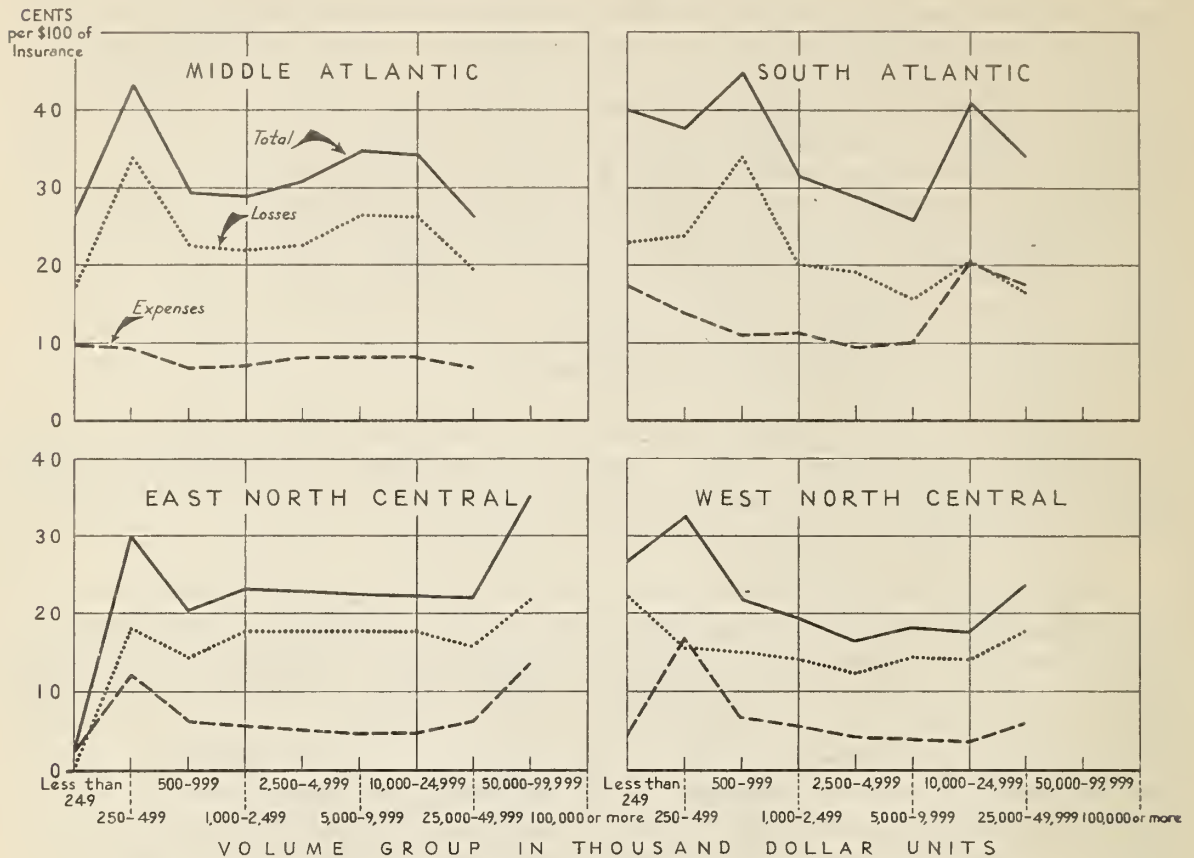
As in the preceding section of this report which deals with business territory and cost, the group showing maximum efficiency comprises a disproportionate number of companies from the North Central States where the burning ratio of farm property is normally lower than in most other parts of the country. Hence it seemed desirable again to present a separate grouping of companies for each geographic division, which would eliminate to some extent the factors of high-cost and low-cost geographic regions. From the groupings for the different geographic divisions as given in table 7, the contribution of each division to the number of companies in each volume group in table 6 may be readily ascertained. The fifth group of table 6, for example, which shows maximum efficiency for the United States as a whole, includes according to table 7, 151 companies from the East North Central division and 110 companies from the West North Central. This makes 262 companies, out of a total of 327 in the fifth group of the table that operate in the low-cost States comprising the two North Central geographic divisions.

Several of the 9 geographic divisions have too few companies to give any special significance to the conclusions suggested by their respective sections of table 7. In two of these divisions only half or less than half of the size or range groups are represented.

The pertinent facts of the sections of the table for the four leading geographic divisions from the point of view of number of companies and volume of insurance are presented graphically in figure 7. The four sections of this figure reveal many contradictions as to the relationship of volume of insurance to efficiency in the different divisions. In the Middle Atlantic States the eighth volume group, which consists of only two companies and which happens to be the last group represented, shows highest efficiency, with the first or smallest size group a very close second. In the South Atlantic States the sixth volume group shows up best. In the East North Central States, if the first group which represents only two small companies is ignored, the third group makes the best showing, although each of the 5 following size groups also shows uniformly low cost. In the West North Central States the fifth group carries off the honors. This, it may be recalled, is the same group that indicates highest efficiency in the table and chart for volume groups for the United States as a whole. The West North Central division, in fact, shows a total cost curve for the various groups represented that corresponds more closely with the total cost curve for the United States as a whole than does that for any other geographic division. It contains, however, one abrupt upward jog in the total cost curve for its second group that is not present in the corresponding United States curve, and this irregularity, it may be noted, is due to heavy expenses of the companies in this second group. The curve for losses resembles more closely the corresponding curve for the United States as a whole.

FIGURE 7

**AVERAGE ANNUAL COST OF INSURANCE IN FARMERS' MUTUAL FIRE INSURANCE
COMPANIES GROUPED BY VOLUME OF INSURANCE, THREE-YEAR PERIOD, 1935-37
FOUR GEOGRAPHIC DIVISIONS**



Summing up this part of the study, it must again be admitted that, although the grouping for the United States as a whole suggests that companies with a volume of from 2 1/2 to 5 millions of insurance are the most efficient, this showing results in considerable measure from heavy representation of North Central companies in this volume group. The groupings for the different geographic divisions show no general agreement on the question of optimum volume for low cost of insurance. The two North Central divisions, however, which together have about three-fifths of all the companies that are included in the study, show costs which, with minor qualifications, are relatively low for the medium-sized groups and higher for those either much smaller or much larger than the average.

CONCENTRATION OF BUSINESS AND COST

Early in this report it was recognized that, even if extent of business territory and volume of insurance in force should be found to have no very significant bearing on the cost of insurance, it still might be found that a relationship between these two factors as evidenced by territorial concentration of business would prove significant

from the point of view of cost. To test this hypothesis the approximate volume of insurance per township of business territory was calculated for each farm mutual in 5 different States. The States selected for this part of the study were New York, Pennsylvania, Wisconsin, Minnesota, and Illinois.

The range of business concentration for each of the 12 groups used in this set-up is indicated in the stub of table 8. This table in its first five sections shows, for each of the States named, the resulting groups of companies and the average costs for each group. In the sixth or last section of this table, all the available farm mutuals in the 5 States are included in a single 12-group arrangement based on the territorial concentration of their business.

As an aid to comparing the average cost shown for different groups of each of the 6 sections of this table, these costs are presented graphically in figure 8. The average costs in the groupings by individual States, it may be noted, show in general a slight though irregular downward trend with the degree of business concentration. Only in the case of Illinois is this downward trend actually pronounced.

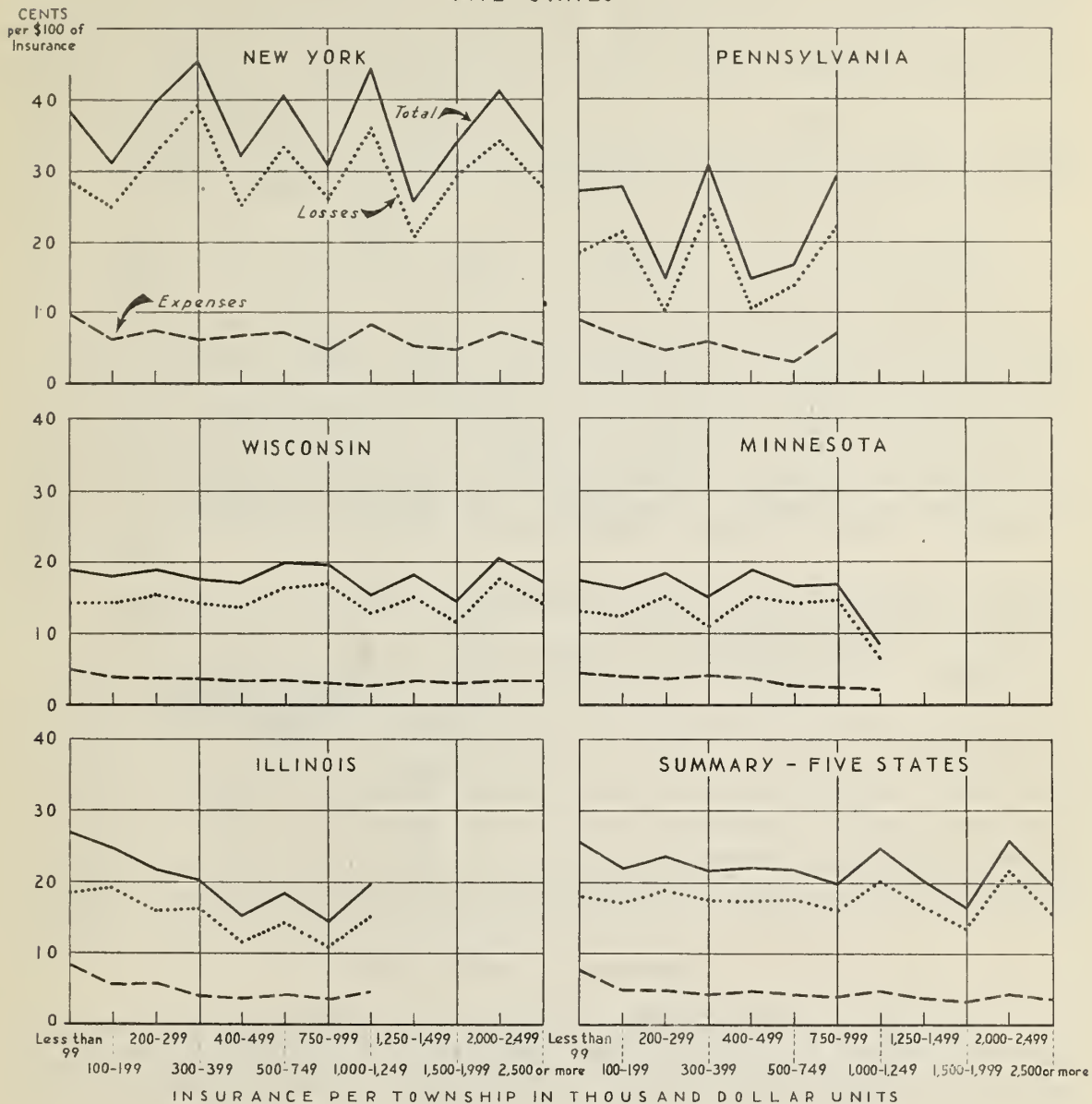
TABLE 8.—Average annual cost of insurance in farmers' mutual fire insurance companies grouped by concentration of business, 3-year period 1935-37, New York, Pennsylvania, Wisconsin, Minnesota, and Illinois

STATE AND VOLUME OF INSURANCE PER TOWNSHIP IN THOUSAND DOLLAR UNITS	COMPANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL
New York:	<i>Number</i>	<i>Dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
Less than 99.....	27	62,958,549	28.6	9.7	38.3
100-199.....	21	118,967,629	24.9	6.2	31.1
200-299.....	21	125,065,644	32.3	7.5	39.8
300-399.....	6	42,815,186	39.2	6.2	45.4
400-499.....	12	88,721,051	25.1	6.8	31.9
500-749.....	14	44,657,724	33.4	7.2	40.6
750-999.....	7	27,676,108	26.1	4.6	30.7
1,000-1,249.....	8	38,166,042	35.9	8.3	44.2
1,250-1,499.....	6	13,583,898	20.8	5.1	25.9
1,500-1,999.....	2	3,211,861	29.3	4.7	34.0
2,000-2,499.....	1	4,520,481	34.1	7.1	41.2
2,500 or more.....	1	2,549,147	27.7	5.4	33.1
All groups.....	126	572,893,320	29.5	7.1	36.6
Pennsylvania:					
Less than 99.....	69	426,153,630	18.3	8.9	27.2
100-199.....	14	69,139,428	21.3	6.5	27.8
200-299.....	4	16,654,209	10.1	4.5	14.6
300-399.....	3	18,761,039	24.9	5.9	30.8
400-499.....	3	6,330,787	10.5	4.1	14.6
500-749.....	4	13,489,963	13.6	2.9	16.5
750-999.....	2	26,562,417	22.1	7.1	29.2
1,000-1,249.....	0	.....	.....	.....	.....
1,250-1,499.....	0	.....	.....	.....	.....
1,500-1,999.....	0	.....	.....	.....	.....
2,000-2,499.....	0	.....	.....	.....	.....
2,500 or more.....	0	.....	.....	.....	.....
All groups.....	99	577,091,473	19.7	8.1	26.8

TABLE 8.—Average annual cost of insurance in farmers' mutual fire insurance companies grouped by concentration of business, 3-year period 1935-37, New York, Pennsylvania, Wisconsin, Minnesota, and Illinois - Continued

STATE AND VOLUME OF INSURANCE PER TOWNSHIP IN THOUSAND DOLLAR UNITS	COMPANIES	3-YEAR AVERAGE ANNUAL VOLUME OF INSURANCE	DISBURSEMENTS PER \$100 OF INSURANCE		
			LOSSES	EXPENSES	TOTAL
Wisconsin:	<i>Number</i>	<i>Dollars</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
Less than 99.....	19	59,283,102	14.2	4.8	19.0
100-199.....	22	127,846,397	14.3	3.8	18.1
200-299.....	25	186,418,786	15.4	3.7	19.1
300-399.....	13	111,129,216	14.2	3.6	17.8
400-499.....	14	81,505,735	13.7	3.4	17.1
500-749.....	12	88,876,512	16.6	3.4	20.0
750-999.....	8	60,923,424	16.9	3.0	19.9
1,000-1,249.....	12	40,478,941	12.7	2.6	15.3
1,250-1,499.....	16	41,281,514	15.0	3.3	18.3
1,500-1,999.....	6	27,568,263	11.5	2.9	14.4
2,000-2,499.....	4	13,222,241	17.4	3.3	20.7
2,500 or more.....	4	20,127,537	14.0	3.2	17.2
All groups.....	155	858,661,668	14.8	3.5	18.3
Minnesota:					
Less than 99.....	30	118,902,513	13.1	4.4	17.5
100-199.....	44	236,976,038	12.3	3.9	16.2
200-299.....	22	154,299,346	15.0	3.5	18.5
300-399.....	14	84,225,504	10.9	4.2	15.1
400-499.....	3	26,171,124	15.1	3.8	18.9
500-749.....	4	40,346,079	14.1	2.5	16.6
750-999.....	2	22,965,935	14.7	2.2	16.9
1,000-1,249.....	2	16,393,479	6.4	2.0	8.4
1,250-1,499.....	0	.....	.....	.....	.....
1,500-1,999.....	0	.....	.....	.....	.....
2,000-2,499.....	0	.....	.....	.....	.....
2,500 or more.....	0	.....	.....	.....	.....
All groups.....	121	700,280,018	13.0	3.8	16.8
Illinois:					
Less than 99.....	20	37,598,926	18.6	8.4	27.0
100-199.....	42	104,944,778	19.3	5.5	24.8
200-299.....	40	99,731,696	16.1	5.7	21.8
300-399.....	34	120,086,117	16.4	3.9	20.3
400-499.....	16	48,494,358	11.7	3.6	15.3
500-749.....	30	121,978,551	14.3	4.2	18.5
750-999.....	13	91,007,156	11.0	3.5	14.5
1,000-1,249.....	3	15,306,003	15.2	4.6	19.8
1,250-1,499.....	0	.....	.....	.....	.....
1,500-1,999.....	0	.....	.....	.....	.....
2,000-2,499.....	0	.....	.....	.....	.....
2,500 or more.....	0	.....	.....	.....	.....
All groups.....	198	639,147,585	15.4	4.7	20.1
Summary (5 States):					
Less than 99.....	165	704,896,720	18.0	7.8	25.8
100-199.....	143	657,874,270	17.1	4.8	21.9
200-299.....	112	582,169,681	18.9	4.8	23.7
300-399.....	70	377,017,062	17.5	4.2	21.7
400-499.....	48	251,223,055	17.4	4.7	22.1
500-749.....	64	309,348,829	17.7	4.1	21.8
750-999.....	32	229,135,040	16.0	3.8	19.8
1,000-1,249.....	25	110,344,465	20.1	4.8	24.9
1,250-1,499.....	22	54,885,412	16.5	3.7	20.2
1,500-1,999.....	8	30,780,124	13.4	3.1	16.5
2,000-2,499.....	5	17,742,722	21.7	4.2	25.9
2,500 or more.....	5	22,676,684	15.5	3.5	19.0
All groups.....	699	3,348,074,064	17.7	5.2	22.9

FIGURE 8
 AVERAGE ANNUAL COST OF INSURANCE IN FARMERS' MUTUAL FIRE INSURANCE
 COMPANIES GROUPED BY CONCENTRATION OF BUSINESS,
 THREE-YEAR PERIOD, 1935-37
 FIVE STATES



The sixth or final section of figure 8 which is headed "Summary (5 States)" shows a fairly obvious though admittedly an irregular downward trend in each of the 3 cost curves. This downward trend becomes more obvious if a process of smoothing out the curves is applied. Thus, by combining the first 3 groups, the second 3, the third 3, and the fourth or last 3 in this set-up, it is found that the weighted averages for losses, expenses, and total costs, respectively, for these 3 enlarged or combination groups are as shown in table 9. If this process is carried one step further by combining the first 6 groups into 1 group and the last 6 into 1, the weighted averages for losses, expenses, and total costs for each of these 2 final combination groups are as follows:

Groups 1-6	17.8	5.4	23.2
Groups 7-12	17.1	3.9	21.0

Since the first 5 sections of table 8 and figure 8 in each case compare only companies in the same State, and since in general these groupings show downward tendencies in costs with increased business concentration, it seems reasonable to assume that the downward trend in costs shown by the sixth section "Summary (5 States)" reflects an actual and direct relationship between business concentration and low cost and not merely an accidental or apparent one, traceable in whole or in part to high or low cost areas in which the companies of given groups operate.

TABLE 9.—Group-cost data of table 8 recalculated for each of four combination groups
— Based on Summary (5 States)

GROUP	DISBURSEMENTS PER \$100 OF INSURANCE		
	LOSSES	EXPENSES	TOTAL
	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
1 - 3.....	18.0	5.9	23.9
4 - 6.....	17.5	4.3	21.8
7 - 9.....	17.2	4.1	21.3
10 - 12.....	16.1	3.5	19.6

SUMMARY AND CONCLUSIONS

The results of this study of size of farm mutuals in relation to their efficiency in providing fire insurance at low average cost are by no means outstandingly positive. They appear, however, to warrant certain pertinent conclusions which may be summarized as follows.

The extent of a company's business territory is less of a factor in average cost of insurance than many have been inclined to believe. At any rate this appears to hold for business territories not exceeding one State. In general the results point to a business territory of somewhat less than an average county as most conducive to low expense and loss costs, but a wide range in average annual costs for the individual companies in each of the territorial size groups suggests that other and less tangible factors far outweigh in importance that of extent of business territory.

What has already been said about extent of business territory as a factor in average annual costs applies also, with little qualification, to volume of business as a factor in costs. Here, again, the results appear to suggest a medium volume, 2 1/2 to 5 millions, as the optimum from the point of view of low average cost. But the evidence is somewhat weak and contradictory, and again the range in cost for different companies in the same volume group, of which figure 5 shows typical examples, suggests that factors other than volume of business are the primary determinants of costs.

On the question of direct relationship between territorial concentration of business and cost, the evidence is somewhat more consistent and conclusive. In fact the study appears to leave little room for doubt that, other factors remaining unchanged, the larger the volume of insurance relative to a company's business territory the lower the costs that may be expected. That such should be the case seems practically unavoidable since the company with a given volume of insurance all in one county, let us say, certainly enjoys obvious advantages over a company with the same volume scattered over a score or more counties. Among these advantages may be mentioned a saving in the travel costs in the acquisition and servicing of business and in special inspection work. Furthermore, the officers and directors of the single county company are more likely to have personal knowledge of the risks in its territory.

The company with more extensive business territory must necessarily rely more heavily on its distant agents or representatives. Unless such an agent has a reasonable volume of business to service, it becomes difficult for the company to keep him properly interested and relatively expensive to direct and supervise his efforts. The widely and thinly spread farm mutual carries an obvious handicap as against a company with the same volume of business concentrated in a smaller area. Very few of the farm fire insurance mutuals offer insurance through agents or agencies that represent a number of competing companies. Their agents are usually local and personal representatives of only one fire insurance mutual, with perhaps a similar relationship to a district or State-wide mutual windstorm insurance company.

In summary it may be said that, although a given business territory and a given volume of business may be more conducive to low cost than larger or smaller territories and volumes, they are at most minor contributing factors. Concentration of business, or at least a reasonable volume in relation to the territory operated in, is somewhat more significant as a cost factor.

The wide variation in costs found for companies in all groups, whether the groups are based on territory, on volume, or on concentration of business, suggests that any or all of these concrete and measurable factors are very frequently outweighed by other less tangible factors. Among these other factors, less tangible but even more significant in their effects on insurance costs, may be suggested those of

maintenance of reasonable standards for membership and for risks, proper conservatism in appraisals for insurance purposes, and effective inspection with a view to the avoidance or removal of needless fire hazards. Most of these less tangible factors may be summed up in the term "efficient management."

Although in this study lowness of average costs for losses and expenses was used as the sole measure of efficiency, this is admittedly an imperfect measure. To give high-grade insurance service to its members, a farm mutual must be able to show reasonable upper limits to its yearly costs as well as low average annual cost for a period of years. In other words, the members must have reasonable assurance that the cost to them will in no year be such as to constitute an unexpected and serious burden.

An elemental safeguard against undue fluctuations in loss costs is, of course, a reasonable volume of insurance over which to spread such losses as may be incurred. Other highly useful means for safeguarding against the need for excessive assessments in any year are found in reinsurance of all relatively large risks and in adequate provision for a safety fund that can be drawn upon when special need arises. These and other principles and problems of sound farm mutual management merit and demand the most careful consideration, although they do not fall within the scope of the present study.

